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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/654,412	09/01/2000	Tatsuya Nakagawa	PM 273795	5709

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MCLEAN, VA 22102

EXAMINER

PHAN, THANH S

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/654,412

Applicant(s)

NAKAGAWA, TATSUYA

Examiner

Thanh S Phan

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui et al. (U. S Pat # 3,978,375) in view of Coucoulas (U.S Pat # 3,959,874).

Regarding claim 1. Fukui et al. discloses a component mounting circuit board comprising: a circuit pattern including a plurality of electrically conductive plate (reference 1); and a resin molded section made of a resin by way of molding so as to cover the circuit pattern and the inner electrical component (reference 6), the resin molded section having an opening (reference 3) allowing an outer electrical component (reference 4) located outside the resin molded section to be connected to the circuit pattern therethrough. However, Fukui et al. does not disclose an inner electrical component electrically connected to the circuit pattern. Coucoulas discloses an inner electronic component (11). It would have been obvious to one of ordinary skill in the art to modify Fukui et al.'s circuit with Coucoulas' teaching for the purpose of providing additional capacities.

Regarding claim 2. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1, and Fukui et al. further discloses wherein the resin molded section is made of an epoxy resin (column 3, lines 4-6).

Regarding claim 3. Fukui et al. and Coucoulas discloses the component mounting circuit board according to 1, and Fukui et al. further disclose wherein a portion of the circuit pattern corresponding to the inner electrical component has member coupled thereto, the member and the portion being thicker than a remaining portion (figure 17).

Regarding claim 4. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1, and further discloses wherein the circuit pattern corresponding to the inner electrical component and has an exposed portion exposed outside the resin molded section (figure 16).

Regarding claim 7. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1, further comprising a support (references 18, 19, 20) provided on the resin molded section to support the outer electrical component.

Regarding claim 8. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1 except for further comprising a terminal provided on the circuit pattern so as to project outside the resin molded section. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the circuit pattern extended outside of the resin molded section since it was known in the art that such extension would provides electrical connection with addition devices.

Regarding claim 9. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1 except for the inner electrical component is connected to the circuit pattern by wire bonding. It would have been obvious in the art to use wire bonding to provide connection.

Regarding claim 10. Fukui et al. and Coucoulas disclose the component mounting circuit board according to claim 1. Fukui et al. further discloses wherein the outer electrical component is soldered to a portion of the circuit pattern corresponding to the opening (Figure 13a).

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui et al. and Coucoulas as applied to the claims above, and further in view of Takeuji et al. (U.S Pat # 4,812,617).

Regarding claim 11. Fukui et al. and Coucoulas disclose a component mounting circuit board comprising: a circuit pattern including a plurality of electrically conductive plates; an inner electrical component electrically connected to the circuit pattern; and a resin molded section made of a resin by way of molding so as to cover the circuit pattern and the inner electrical component. However do not disclose the component mounting circuit board is incorporated in a microwave oven and on which a power supply circuit for driving a magnetron, a switching circuit, etc. are mounted. Takeuji et al. discloses a microwave oven comprising a printed circuit board supporting a plurality of circuit elements (Abstract lines 7-9). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the combination of Fukui et

Art Unit: 2841

al. and Coucoulas' circuit board in Takeuji et al.'s microwave oven for the purpose of minimizing space usage and better heat diffusion.

Regarding claim 12. The component mounting circuit board according to claim 11, wherein the resin molded section includes an opening used when an outer electrical component located outside the resin molded section is connected to the circuit pattern (see claim 1).

Regarding claim 13. The method steps are inherent since the limitations of the apparatus are disclosed.

Response to Arguments

In response to applicant's argument regarding "Gold et al". The Examiner had a typo, thus a new final rejection is hereby issued.

Applicant's arguments filed 10-31-02 have been fully considered but they are not persuasive.

Applicant argues that:

[1]: Coucoulas is non-analogous art;

[2]: Fukui et al. does not teach covering an inner electrical component with molded resin; and

[3]: Coucoulas fails to disclose the "outer electrical component is connected to the lead frame in the opening."

Examiner disagrees:

Regarding [1]: In response to applicant's argument that Coucoulas is nonanalogous art, it has been held that a prior art reference must either be in the field of

Art Unit: 2841

applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Coucoulas and Fukui et al. teach mounting components on a circuit board.

Regarding [2]: Coucoulas teaches covering an electrical component to be mounted on a circuit board with resin. A skilled artisan would have been motivated to use the design of Coucoulas to protect the electrical component

Regarding [3]: Coucoulas teaches providing access to external electrical component via holes within the molded layer.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2841

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh S Phan whose telephone number is 703-305-0069. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S Martin can be reached on 703-308-3121. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7721 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

tsp
May 28, 2003

A handwritten signature in black ink, appearing to read 'D. S. Martin', is positioned above the printed name and title.

DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800